

WHAT IS CLAIMED IS:

1. A method for the insertion of information for the control of the broadcasting of a data stream in a heterogeneous network, the heterogeneous network including at least one entry sub-network conveying first packets and a basic network conveying second packets, the entry sub-network being connected to the basic network by means of an entry node forming the second packets from at least one sub-part of at least one first packet,

wherein the entry node:

- receives first packets from the entry sub-network
- 10 - associates an access level with each first packet from a plurality of access levels, as a function of a predetermined policy of association;
- forms each second packet by enclosing at least a first packet or part of a first packet into said second packet, the first packets or part of the first packets enclosed within the second packet being associated with a same access level ;
- 15 - for each second packet, inserts into a field of the second packet representing the broadcast control information, the same access level associated with the at least first packet or part of a first packet enclosed within the second packet ;
- 20 - transmits the second packets formed into the basic network.

2. A method according to claim 1 wherein, at each change in access level, between a first packet associated with a previous access level and another first packet associated with a new access level, the entry node:

- forms a synchronization second packet such that the start of the payload information of the synchronization second packet corresponds to the start of the payload information of the first packet associated with the new access level;
- 25 - inserts a synchronization marker in the synchronization second packet;

3. A method according to claim 2, wherein the entry node modifies the size of each second packet preceding one of the synchronization second packets, in such a way that no filler element is necessary to complete said preceding second packet.
- 5 4. A method according to claim 3, wherein the entry node modifies the size of the synchronization second packet, so that the sum of the modified size of the preceding second packet and the modified size of the synchronization second packet is substantially equal to the normal size of a second packet.
- 10 5. A method according to claim 2, wherein the entry node manages a mechanism, put into effect at each change in access level, for obtaining a current distance in memory, between a stored position of a forthcoming start of a first packet and a current position of a read pointer used for the construction of the second packets.
6. A method according to claim 5, wherein the entry node performs the following steps:
- the entry node obtains said current distance;
 - if the current distance is equal to zero, the entry node generates and
15 sends a synchronization second packet for which the start of the payload information corresponds to the start of the payload information of a first packet associated with the new access level, this synchronization second packet comprising a synchronization marker;
 - if the current distance is smaller than the normal size of a second
20 packet, the entry node generates and sends a truncated second packet, known as a preceding second packet, whose reduced size is equal to the current distance, and then generates and sends a synchronization second packet for which the start of the payload information corresponds to the start of the payload information of a first packet
25 associated with the new access level, this synchronization second packet comprising a synchronization marker;
 - if the current distance is greater than or equal to the normal size of the second packet, the entry node sends a normal-sized second packet which is not a synchronization second packet.

7. A method according to claim 2, wherein, at each change in access level, the entry node also inserts an access level change marker into the synchronization second packet.
- 5 8. A method according to claim 1, wherein the policy of association of an access level with each first packet is based upon restriction on the use of the data stream and wherein the access level comprises use restriction information.
9. A method according to claim 1, wherein the policy of association of an access level with each first packet is based on the use of a plurality of time slots, and wherein the entry node:
- 10 - obtains the time slot, among said plurality of time slots, that includes the instant of processing, by the entry node, of the given first packet;
- associates one of the access levels with the first packet as a function of the time slot obtained.
- 15 10. A method according to claim 1, wherein the policy of associating an access level with each first packet is based on the use of a plurality of pieces of control information that can be contained in the first packets, and wherein the entry node:
- obtains at least one piece of control information, from among said plurality of pieces of control information, contained in a given first packet;
- 20 - associates one of the access levels with the given first packet as a function of said at least one piece of control information obtained.
11. A method according to claim 8, wherein the policy of associating an access level with each first packet is based on the use of said plurality of time slots and said plurality of pieces of control information
- 25 wherein the entry node:
- obtains the time slot, among said plurality of time slots, that includes the instant of processing, by the entry node, of a given first packet;
- obtains at least one piece of control information, from among said plurality of pieces of control information, contained in a given first packet;
- 30 - associates one of the access levels with the given first packet as a function of the time slot obtained and said at least one piece of control information obtained.

12. A method according to claim 1, wherein the data stream is transmitted by an entry terminal and wherein the entry terminal is a digital type of terminal connected to the entry sub-network and directly generating the data stream in the form of first packets.

13. A method according to claim 1, wherein the data stream is transmitted by an entry terminal and wherein the entry terminal is an analog type terminal, connected to the entry sub-network by means of an independent adapter enabling the conversion, into first packets, of the data stream generated in the form of analog signals by the entry terminal.

14. A method according to claim 1, wherein the data stream is transmitted by an entry terminal and wherein the entry terminal is an analog type terminal directly connected to the entry node and wherein the entry node integrates an adapter enabling the conversion, into first packets, of the data stream generated in the form of analog signals by the entry terminal.

15. A method according to claim 1, wherein the data stream is transmitted by an entry terminal and wherein the entry terminal is integrated into the entry node and the entry node directly generates the data stream in the form of first packets.

16. A method for the processing of information for the control, of the broadcasting of a data stream in a heterogeneous network, the heterogeneous network including at least one destination sub-network conveying first packets and a basic network conveying second packets, the destination sub-network being connected to the basic network by means of a destination node

wherein, for each second packet received, the destination node:

(a) determines whether the second packet received is intended for the destination node or the destination sub-network;

(b) if the second packet is intended for the destination node or the destination sub-network, it obtains the access level contained in a field of the second packet representing the broadcast control information;

(c) determines whether the access level obtained is an access level accepted by the destination node;

(d) if the access level obtained is an accepted access level, it extracts the contents of the second packet and generates at least one first packet;

(e) processes or transfers the first packets formed to the destination sub-network.

17. A method according to claim 16 wherein, if the access level obtained is not an accepted access level, the destination node swallows the received second packet, without forming any first packets.

5 18. A method according to claim 16 wherein, after having performed the step (a), the destination node tries to detect an access level change marker in the second packet, and wherein, if an access level change marker is detected, the destination node:

- performs the steps (b) and (c);
- stores an "accepted" or "not accepted" state of a first flag pertaining to the access level
10 obtained;

- performs the steps (d) and (e) if the state of the first stored flag is the "accepted" state, and wherein, if an access level change marker is not detected, the destination node:

- reads the state of the first flag stored, without performing the steps (b) and (c);
- performs the steps (d) and (e) if the state of the first stored flag is "accepted".

15 19. A method according to claim 16, wherein, after having performed the step (a), the destination node tries to detect a synchronization marker in the second packet, and wherein, if a synchronization marker is detected, the destination node considers the second packet to be a synchronization second packet and:

- stores a "true" state of a second flag pertaining to the reception of a synchronization
20 second packet, the state of the second flag stored by default being "false";

- performs the next steps for processing the second packet;

and wherein, if a synchronization marker is not detected, the destination node:

- reads the state of the second stored flag;

- performs the next steps for processing the second packet if the state of the second
25 stored flag is "true".

20 A method according to claim 19, wherein, if the state of the second stored flag is "false", the destination node swallows the second packet received without performing the next steps of the processing of the second packet.

21. A method according to claim 16, wherein the access level comprises information
30 for the restriction on the use of the data stream by the destination node.

22. A method according to claim 16, wherein the data stream is intended at least for one digital type of destination terminal connected to the destination sub-network and directly receiving the first packets generated by the destination node and representing the data stream.

5 23. A method according to claim 16, wherein the data stream is intended for at least one analog type destination terminal, connected to the destination sub-network by means of an independent adapter enabling the conversion, into analog signals, of the first packets generated by the destination node and representing the data stream.

10 24. A method according to claim 16, wherein the data stream is intended for at least one analog type destination terminal directly connected to the destination node, and wherein the destination node integrates an adapter enabling the conversion, into analog signals, of the first packets generated by the destination node and representing the data stream.

15 25. A method according to claim 16, wherein the data stream is intended for the destination node, and wherein the destination node directly processes the data stream in the form of first packets.

26. A method according to claim 1, wherein the heterogeneous network is a home audiovisual network.

27. A method according to claim 1, wherein the first packets are IEEE 1394 type packets.

20 28. A method according to claim 1, wherein the basic network is a switched network.

29. An entry node for the insertion of information for the control of the broadcasting of a data stream transmitted in a heterogeneous network, the heterogeneous network including at least one entry sub-network conveying first packets and said basic network conveying second packets, the entry node being connected to the basic network and to the entry sub-network,

25 wherein the entry node comprises:

- means for receiving first packets from the entry sub-network;
- means for the association of an access level with each first packet from among a plurality of access levels, as a function of a predetermined policy of association;

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- means for the formation of each second packet by enclosing at least a first packet or part of a first packet into said second packet, the first packets or part of the first packets enclosed within the second packet being associated with a same access level;
- 5 - means for the insertion into a field of each second packet, said field representing the broadcast control information, the same access level associated with the at least first packet or part of a first packet enclosed within said second packet;
- means for the transmission of second packets into the basic network.

10 **30.** An entry node according to claim 29 comprising:

- means for the detection of a change in access level, between a first packet associated with a previous access level and another first packet associated with a new access level;
- 15 - means for the formation of a synchronization second packet such that the start of the payload information of the synchronization second packet corresponds to the start of the payload information of the first packet associated with the new access level;
- means for the insertion of a synchronization marker in the synchronization second packet.

20 **31.** An entry node according to claim 29, comprising means to modify the size of each second packet preceding one of the synchronization second packets, in such a way that no filler element is necessary to complete said preceding second packet.

25 **32.** An entry node according to claim 31, comprising means to modify the size of the synchronization second packet, so that the sum of the modified size of the preceding second packet and the modified size of the synchronization second packet is substantially equal to the normal size of a second packet.

30 **33.** An entry node according to claim 30, comprising means, activated at each change in access level, for the management of a mechanism to obtain a current distance in memory, between a stored position of a forthcoming start of a first packet and a current position of a read pointer used for the construction of the second packets.

34. An entry node according to claim 33, comprising means of selective activation as a function of the value of the current distance obtained, such that:

- 5 - if the current distance is equal to zero, the activation means activate means for the generation and sending of a synchronization second packet for which the start of the payload information corresponds to the start of the payload information of a first packet associated with the new access level, this synchronization second packet comprising a synchronization marker;
- 10 - if the current distance is smaller than the normal size of a second packet, the activation means activate means for the generation and sending of a truncated second packet, known as a preceding second packet, whose reduced size is equal to the current distance, and then means for the generation and sending of a synchronization second packet for which the start of the payload information corresponds to the start of the payload information of a first packet associated with the new access level, this synchronization second packet comprising a synchronization marker;
- 15 - if the current distance is greater than or equal to the normal size of the second packet, the activation means activate means for the sending of a normal-sized second packet which is not a synchronization second packet.
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35. An entry node according to claim 30, comprising means for the insertion, at each change in access level, of an access level change marker into the synchronization second packet.

25 36. An entry node according to claim 29, wherein the policy of association of an access level with each first packet is based upon restriction on the use of the data stream and wherein the access level comprises use restriction information.

37. An entry node according to claim 29, wherein the policy of association of an access level with each first packet is based on the use of a plurality of time slots,
30 and wherein the entry node comprises:

- means for obtaining the time slot, among said plurality of time slots, that includes the instant of processing, by the entry node, of the given first packet;
- means for associating one of the access levels with the first packet as a function of the time slot obtained.

5 **38.** An entry node according to claim 29, wherein the policy of associating an access level with each first packet is based on the use of a plurality of pieces of control information that can be contained in the first packets, and wherein the entry node comprises:

- means for obtaining at least one piece of control information, from among said plurality of pieces of control information, contained in a given first packet;
- means for associating one of the access levels with the given first packet as a function of said at least one piece of control information obtained.

15 **39.** An entry node according to claim 37, wherein the policy of associating an access level with each first packet is based on the use of said plurality of time slots and said plurality of pieces of control information, and wherein the entry node comprises:

- means for obtaining the time slot, among said plurality of time slots, that includes the instant of processing, by the entry node, of a given first packet;
- means for obtaining at least one piece of control information, from among said plurality of pieces of control information, contained in a given first packet;
- means for associating one of the access levels with the given first packet as a function of the time slot obtained and said at least one piece of control information obtained.

20 **40.** An entry node according to claim 29, wherein the entry node is directly connected to a entry terminal of analog type , which transmits the data stream and wherein the entry node integrates an adapter enabling the conversion, into first packets, of the data stream generated in the form of analog signals by the entry terminal.

25 **41.** An entry node according to claim 29, wherein the entry node comprises an entry terminal, which transmits the data stream and wherein the entry node comprises means for the direct generation of the data stream in the form of first packets.

30 **42.** An entry node according to claim 29, wherein the heterogeneous network is a home audiovisual network.

43. An entry node according to claim 29, wherein the first packets are IEEE 1394 type packets.

44. An entry node according to claim 29, wherein the basic network is a switched network.

5 45. A destination node for the processing of information to control the broadcasting of a data stream in a heterogeneous network, the heterogeneous network including at least one destination sub-network conveying first packets and said basic network conveying second packets, the destination node being connected to the destination sub-network and to the basic network,

10 wherein the destination node comprises: (a) means for the reception of second packets from the basic network;

 (b) means to determine whether a second packet received is intended for the destination node or the destination sub-network;

15 (c) means to obtain the access level contained in a field of the second packet representing the broadcast control information, if the second packet is intended for the destination node or the destination sub-network, and means to determine whether the access level obtained is an access level accepted by the destination node;

20 (d) means for the extraction of the content of the second packet, if the access level of the second packet is an accepted access level and a means, to generate at least one first packets with the content of the second packet received;

 (e) means for the process or transfer of the at least first packets generated to the destination sub-network.

25 46. A destination node according to claim 45, comprising means to swallow the received second packet, without forming first packets, if the access level obtained is not an accepted access level.

47. A destination node according to claim 45, comprising means to detect an access level change marker in the second packet, and activation means selective as a function of the value of the current distance obtained such that:

30 if an access level change marker is detected, the activation means activate:

* the means (c);

- means for the storage of an "accepted" or "not accepted" state of a first flag pertaining to the access level obtained;
- the means (d) and (e) if the state of the first stored flag is the "accepted" state,

5 * if an access level change marker is not detected, the activation means activate:

- means for reading the state of the first flag stored, without activating the steps (c);
- the means (d) and (e) if the state of the first stored flag is "accepted".

10 48. A destination node according to claim 45, comprising means to detect an access level change marker in the second packet, and activation means selective as a function of the value of the current distance obtained such that:

* if a synchronization marker is detected, the destination node considers the second packet to be a synchronization second packet and the activation means activate:

- 15 - means for the storage of a "true" state of a second flag pertaining to the reception of a synchronization second packet, the state of the second flag stored by default being "false";
- the other means for processing the second packet

* if a synchronization marker is not detected, the activation means activate:

- 20 - means for reading the state of the second stored flag;
- the other means for processing the second packet if the state of the second stored flag is "true".

49. A destination node according to claim 48, comprising means to swallow the second packet received, without activating the other means for the processing of the second packet if the state of the second stored flag is "false".

25 50. A destination node according to claim 45, wherein the access level comprises information for the restriction on the use of the data stream by the destination node.

51. A destination node according to claim 45, wherein the data stream is intended at least for one digital type of destination terminal connected to the destination sub-network and directly receiving the first packets generated by the destination node and representing the data stream.

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52. A destination node according to claim 45, wherein the data stream is intended for at least one analog type destination terminal, connected to the destination sub-network by means of an independent adapter enabling the conversion, into analog signals, of the first packets generated by the destination node and representing the data stream.

5 53. A destination node according to claim 45, wherein the data stream is intended for at least one analog type destination terminal directly connected to the destination node, and wherein the destination node integrates an adapter enabling the conversion, into analog signals, of the first packets generated by the destination node and representing the data stream.

10 54. A destination node according to claim 45, wherein the data stream is intended for the destination node, and wherein the destination node comprises a means to directly processes the data stream in the form of first packets.

55. A destination node according to claim 45, wherein the heterogeneous network is a home audiovisual network.

15 56. A destination node according to claim 45, wherein the first packets are IEEE 1394 type packets.

57. A destination node according to claim 45, wherein the basic network is a switched network.

20 58. A storage medium storing a computer program instructions for programming a programmable processing apparatus to become configured as an apparatus as set out in any claim 29 or 45.

59. A signal carrying a computer program instructions for programming a programmable processing apparatus to become configured as an apparatus as set out in any claim 29 or 45.

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